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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,866	06/25/2003	Shune-Long Wu	MR3029-76	2120
4586	7590	04/14/2004	EXAMINER	
ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043			WU, SHEAN CHIU	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 04/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

**Office Action Summary****Application No.**

10/602,866

**Applicant(s)**

WU ET AL.

**Examiner**

Shean C Wu

**Art Unit**

1756

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

***Claim Rejections - 35 USC § 112***

1. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for achiral swallow-tailed compound, 2-propylpentyl 4-(4'-decyloxybiphenyl-4-carbonyl) benzoate (p), mixed with an antiferroelectric liquid crystal (S)-4-(1-methylheptyloxy) carbonylphenyl-4'octyloxy-4-biphenylcarboxylate (S-MHPOBC, m), does not reasonably provide enablement for achiral swallow-tailed compound, 2-propylpentyl 4-(4'-nonyloxybiphenyl-4-carbonyl) benzoate mixed with m. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The reference only teaches that 2-propylpentyl 4-(4'-nonyloxybiphenyl-4-carbonyl) benzoate is mixed with ferroelectric material, 1-ethylpropyl (S)-2-(2-fluoro-4-(4'-decyloxybiphenylcarbonyloxy) benzoyloxy) propanoate. See page 9 bridging page 10.

2. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claims 4 and 6-7, the claim language "ferroelectric liquid crystal material" does not have an antecedent basis. Claim 1 only has claim language "doping an antiferroelectric liquid crystal material" with achiral swallow-tailed compound.

In Claim 5, the claim language "antiferroelectric liquid crystal mixture" does not have an antecedent basis in Claim 4.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2 and 4-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al. (Liquid Crystals, 2002, Vol. 29, N0.1, 39-45).

The reference discloses an achiral swallow-tailed material, 2-propylpentyl 4-(4'-decyloxybiphenyl-4-carbonyl) benzoate (p) mixed with an antiferroelectric liquid crystal (S)-4-(1-methylheptyloxy) carbonylphenyl-4'-octyloxy-4-biphenylcarboxylate (S-MHPOBC, m). The electrooptical response of this mixture in the ferroelectric phase displays V-shaped switching, while that in the antiferroelectric phase displays a double hysteresis switching. See reference Figs 3 and 5-7. The reference anticipates the claimed invention.

5. Claims 12-14 are rejected under 35 U.S.C. 102(a) as being anticipated by Wu et al. (Liquid Crystals, 2003, Vol. 30, No.2, 205-210).

The reference discloses that a ferroelectric liquid crystal 1-ethylpropyl (S)-2-(2-fluoro-4-(4'-decyloxybiphenylcarbonyloxy) benzoyloxy) propanoate was synthesized and mixed with an

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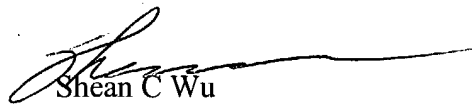
achiral swallow-tailed material 2-propylpentyl 4-(4'-nonyloxybiphenyl-4-carbonyl) benzoate.

The binary ferroelectric liquid crystal mixture displays V-shaped switching in ferroelectric phase. See abstract and Figs. 1-4. The reference anticipates the claimed invention.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Shean C Wu  
Primary Examiner  
Art Unit 1756

scw